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THE NORWICH MUSEUM.

By J. H. Gurney, F.L.S., F.Z.S.

With the sanction of the Museum Committee, Messrs. Jarrold and Sons have just published an Official Handbook of nearly two hundred pages, with illustrations, as a Guide to the Norwich Castle Museum. The greater portion of it has been written by Mr. Thomas Southwell, than whom no one could have been found better qualified for the task.

The History of the Museum.—The originator and first President of the Norwich Museum was Sir J. E. Smith, the friend of Linnæus, and founder of the Linnean Society; and great indeed would be the surprise of that distinguished man if he could now arise and see the present state of the collections in their new home.

The Museum in its present form is the outcome of Sir James Smith's zeal* for a cause, and Mr. Southwell's book forms an admirable Guide to it. This will serve me as a peg for a few general remarks, which I hope may induce some of your readers to come and view our famous Norfolk Fossils and rare collection of Birds of Prey.

The present Museum, which is vastly more commodious than the old one in St. Andrew's Street, was completed and opened to the public on Oct. 26th, 1895. It consists of an ancient Norman keep, called "The Castle," and six spacious modern buildings, which, with the corridors between them, accommodate the British Birds, the Raptorial Birds, the Foreign Birds (not raptorial), the Picture Gallery, the Mammals, and Fishes, as well as the fine geological collection formed principally by the late Mr. John Gunn. These have been arranged pretty nearly in accordance with the scheme submitted by Mr. P. L. Sclater to the Trustees in 1891, and have been more than once inspected and generally approved by Sir William Flower, our leading authority on museums. There is also a Muniment Room, in which are preserved municipal documents which go back to the year 1240; and, as will be seen from the accompanying plan, a good committee-room, where the Norwich naturalists meet once a month during seven months of the year for scientific discussion, and to read papers.

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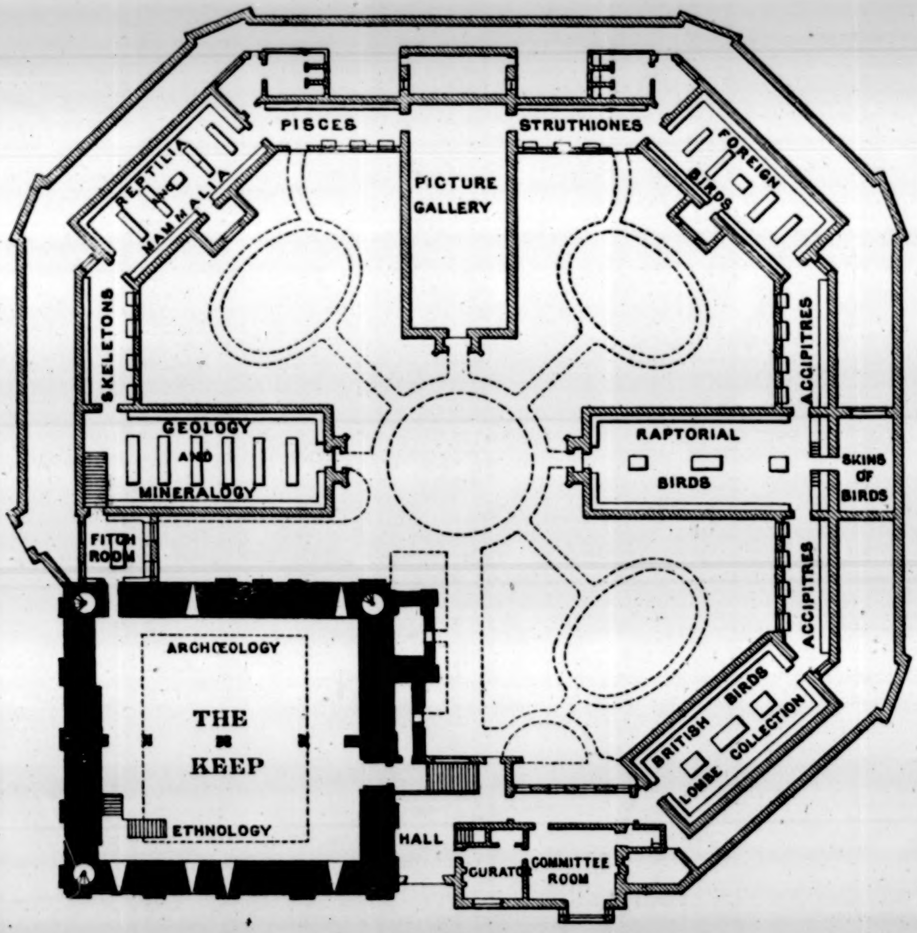
* Associated with Smith, however, were several other distinguished men.



PLAN OF NORWICH CASTLE AND MUSEUM.

The collections, which are the property of the Corporation of Norwich, are still under the watchful care of Mr. James Reeve, who has had the charge of them for about forty-five years, and are open to the public on four days in the week free of charge. The first room which we enter is that devoted to—

The British Birds.—The gem of the British collection is a very perfect specimen of the Great Auk (*Alca impennis*), which formerly belonged to Mr. Lombe; and hardly less interesting is the central case of seven Great Bustards, together with one egg, all native specimens of the old Norfolk race, with the history of each attached. These particulars may be found in Stevenson's 'Birds of Norfolk.' An inconspicuous little bird in Case VII. may not attract the visitor, though Mr. Southwell makes allusion to it, but is nevertheless of considerable importance, since it is the first British example recognised of Savi's Warbler (*Locustella luscinioides*); and not far off are three others, the quartette being worth, according to the price at which the last one changed hands, fifty-two guineas! My late father had two of these birds in the flesh. The first British Buffle-headed Duck and the first British example of Steller's Duck are in separate cases, as they deserve to be, and are in excellent preservation, considering that they have both been stuffed for sixty-six years. A King Duck (*Somateria spectabilis*), shot at Hunstanton in 1888, and presented by Mr. Southwell, to whose exertions the Museum is further indebted for securing the unique Caspian Plover (*Ægialitis asiatica*), stands near them; and a superb old male of the Red-crested Pochard, killed on Horsey Broad, is probably the best example of this species ever killed in England. The Red-crested Pochard is one of the nineteen British species which were first obtained in Norfolk. A remarkably fine Squacco Heron, in nuptial plumage, from Surlingham Broad, is well worthy of attention. This and the Crane, Sabine's Gull (from Breydon Broad), two white-winged Crossbills, and a Broad-billed Sandpiper (also from Breydon), belonged to the late Henry Stevenson, whose fine local collection the city of Norwich ought never to have allowed to be dispersed. It would occupy too much space to enumerate all the choice Norfolk-killed rarities in this Museum, most of which have at one time or another been reported in 'The Zoologist'; but among them are also the following:—

Caspian Tern (old and young).
Roseate Tern (from Lord Lilford).
Red-breasted Snipe (Horsey Broad).
Black Stork (bought at Rising's sale for eleven guineas).
Buff-breasted Sandpiper (the second British example).
White's Thrush (Hickling).
Roller (caught at sea).
Alpine Swift (Buckenham).
Richard's Pipit (from Lord Lilford).
Little Bustard (two specimens).
Greenland Falcon (Cromer).
Red-footed Falcon (two).
Green-backed Porphyrio.
Fine case of Norfolk Ruffs.
Bee Eater.

Several white and piebald varieties on the shelves may be noticed of such birds as the Woodcock, Red-backed Shrike, Snipe, Nightjar, Buzzard, Kestrel, Jay, Brambling, and Pheasant; but perhaps the most striking varieties are a slate-coloured Moorhen, with feathers of hair-like texture, and a beautifully pied Long-eared Owl, shot at Burgh, and presented by Mr. C. J. Lucas—albinism in Owls being of very rare occurrence.

In the British Room, though not "British-killed," is a family group of Waxwings, male, female, and nestling, with the nest, all collected by Mr. John Wolley in Finnish Lapland in 1856, when he discovered for the first time the long-sought nesting-place of this beautiful wanderer. This famous oologist was in the habit of sending yearly most of the birds obtained by himself or his agents in Lapland to the Museum at Norwich, where they will ever be objects of special interest to those who are possessors of eggs collected by him, as being in some cases the very birds which laid them. The Oological Collection (excepting the Raptorial Eggs) and the rest of the Nests are in the first and second corridors, and, *inter alia,* comprise locally taken and neatly preserved nests of the Ruff (J. A. Cole), Gadwall (Col. Butler), Hawfinch, Long-tailed Tit, &c., and a nest of the Crossbill taken by John Hancock in Ross-shire.

The Diurnal Birds of Prey.—The collection of Raptorial Birds is, as Mr. Southwell truly observes, a lasting memorial of the energy and acquaintance with this branch of Ornithology possessed by my late father, which has afforded pleasure even to those who are not professed naturalists. Many of the specimens have been described at one time or another in 'The Ibis,' and some are types of new species; while others have a value of their own as being the originals of Wolf's beautiful figures. Only a few of the many mentioned by Mr. Southwell can be here noticed. Case I. contains the Secretary Birds; Case II. the Vultures. In Case III. is a fine group of Californian Vultures, *Pseudogryphus californianus*, with nestling, skeleton, and egg, procured at the same time as the pair in the British Museum; a moribund species, already so rare that when a skin comes into the market it is advertised with the Great Auk and Labrador Duck! Ridgway calls it the peer of the Condor, and it is greatly to be regretted that its destruction by poison is found necessary by stock-owners, for there are now very few left. Another noble species probably marked for extinction, in Europe at least, is the Lämmergeyer, of which there is a fine series of sixteen from different localities, including the valley of Magna near Nice, Sardinia, Bagnères de Bigorre (Philippe), Constantine (Dr. L. Burvey), Erzeroom (with white scapular patches, perhaps incipient albinism), Landom, Himalaya (Major Horsburgh), Tagalang Pass, Ladakh (Capt. Adair), and Lamalmon, Abyssinia. Mr. Southwell reminds us of the well-known story told by Pliny—how one of these birds, mistaking the bald head of the poet Æschylus for a stone, dropped a tortoise from on high, and caused the death of the poet.

The finest of all the Sea Eagles, the deep-billed Kamtschatka Sea Eagle, *Thalassaëtus pelagicus*, is represented by four mounted skins and a nestling; but the more recently described *T. branickii*, which is black all over except the tail, is still a desideratum in the Museum. Passing over the cosmopolitan Ospreys, we come to Anderson's Pern; an abnormal Buzzard, with a small beak and a big mouth, from Africa, which created some excitement thirty years ago, and was named by my father *Stringonyx andersoni* (Trans. Zool. Soc. 1865, p. 117, pl. xxix.), a generic appellation which proved to have been anticipated by *Machærhamphus*, Westerman, conferred on an allied species in the Australian region.

Three or four melanistic examples of Montagu's Harrier, *Circus cinerascens*, which has the same curious tendency to melanism as the Skua Gulls, are of interest, more particularly to

British ornithologists. A finely-preserved *Buteo galapagensis*, collected by Dr. George Bauer, is worth a few minutes' comparison with the representative array of eleven specimens of *Buteo swainsoni;* while a very pale *B. krideri*, shot and presented by Mr. Arthur Stark, should by no means be passed over. *Haliæëtus vociferoides*, Des Murs, is another addition since my father's death, and so likewise is *Leucopternis semiplumbea*, obtained by Mr. George Cherrie, of Chicago, of which a fairly good picture is given at page 47 of 'The Guide.'

Mr. Southwell very properly bestows a word of praise to the taxidermic skill displayed in the case of *Buteo solitarius*, the small Buzzard of the Sandwich Islands, the subject of my father's last memoir ('Aves Hawaiienses,' 1893, part v.). Equally creditable to the late Mr. Roberts, who for many years mounted specimens for the Museum, is the group of *Gypoictinia melanosternon*, the acquisition of which, through Mr. K. H. Bennett, was a source of gratification at the time. A full description of the nestling in this group is given in 'The Ibis' (1886, p. 458), and we also have the eggs.

Our white variety of the Sea Eagle (*Haliæëtus albicilla*), singular for its rarity, though not unique, obtained many years ago in Ireland, was painted from the life by H. L. Meyer in his 'British Birds,' where he remarks:—"No painting can fitly represent the delicate and beautiful colour of this bird. When its feathers are ruffled, as may be frequently observed, at the pleasure of the creature, a delicate azure blue tint is seen to pervade the basal part of the feathers, which, appearing through the whole transparent texture, imparts to its plumage the singular tint it displays" ('Brit. Birds,' i. p. 14). As it has been stuffed for more than fifty years, it is not surprising that "the delicate azure blue" is no longer perceptible.

As special rarities also may be noticed the Long-tailed West African Goshawk, *Urotriorchis macrurus*, nearly as rare as when first described by Dr. Hartlaub in 1855; *Tinnunculus alopex*, the Fox-coloured Kestrel from the Red Sea, lately received in exchange from the Museum at Florence; *Accipiter rufotibialis*, from Kina Balu, Borneo; *Microhierax melanoleucus*, from China, collected by Mr. C. B. Rickett; *Baza bismarcki*, from New Britain (*cf.* 'Ibis,' 1893, p. 339); and *B. sumatrensis*, from Burma (T. A. Hauxwell).

The latest addition of all is an Australian *Hieracidea orientalis*, from Mr. R. J. Ussher, which is worth alluding to because it is said to have been shot at Dunmore, Co. Waterford, last March. If so, it was probably brought over by sailors and escaped. *Hieracidea*—which partakes of the nature of a Falcon and a Buzzard, having the beak of the former and the legs of the latter—has been sometimes kept in confinement at the Regent's Park Gardens.

The Nocturnal Birds of Prey. — The Owls, noiseless in flight and keen of sight, as Mr. Southwell says, having eyes peculiarly adapted to their nocturnal habits, are located upstairs, and are reached by a staircase leading from the entrance to the Skin Cabinets. As the eye wanders along the shelves, one of the first to attract notice is the beautifully pencilled and mottled *Pseudoptynx gurneyi* (Tweeddale), in which the colours of brown and grey blend like the tints upon an old forest tree. The genus *Pseudoptynx*, Kaup, was adopted by my father for three species, to which a fourth has since been added, *viz.* the recently described *P. doerriesi*. *P. blakistoni* and *P. doerriesi* are associated with the name of the late Henry Seebohm, the latter, indeed, being the last species which that active and ardent ornithologist lived to describe. Our handsome specimen of *P. blakistoni*, a male in the second year, was taken in the island of Yesso. Beside it stands a skeleton of a bird from the same nest, which afterwards died at the Zoological Society's Gardens.

The next to claim attention is the noble African genus *Scotopelia*, and of *Scotopelia peli* the Museum is fortunate in having two examples, one from Dr. Livingstone, and one from Colonel O'Connor. The latter specimen of this bird was brought to England alive, and lived for a long time in a cage in my father's garden, where it twice sat for its portrait by Wolf, whose skill is especially shown in his delineation of raptorial birds. The type of Ussher's Owl stands on a table in the centre of the room, with the large *Huhua shelleyi*, presented by Dr. Sharpe, and other rarities under shades, e.g. *Sceloglaux albifacies*, from New Zealand, brought home in 1895 by Sir Francis Boileau, of which there is another specimen in the gallery. Two examples of the Madagascar Bay Owl, *Heliodilus soumagnei*, procured by Mr. J. Wills, and the Sooty Owls of New Guinea and Australia, complete this series. Among additions made since my father's death, special mention may be made of *Scops sibutuensis*, a second specimen of *S. luciæ*, *Ninox ochracea*, from Tonkean in Celebes (very rare), and *N. spilonotus*, from the Philippines, described and presented by Mr. D. Worcester.

The series of Owls closes with *Photodilus*. There are altogether 197 species in the Norwich Museum, and of diurnal birds of prey there are 404 out of a possible 472, leaving 68 to be procured, for which the Museum Committee appeals to travellers and naturalists who are inclined to help in this direction. Desiderata lists in both groups may be had on application.

In several of the Cases are placed printed cards showing the geographical distribution by means of small maps of the world, with the inhabited area coloured red, most instructive to those who wish to know to what part of the earth's surface any given genus belongs. The Short-eared Owl, for instance, is shown to be almost cosmopolitan, except in the Australian region; while the Great Harpy Eagle is only found in Central America, and in the northern portion of South America.

Exotic Birds.—Apart from the series of rapacious birds, the foreign collection is not very extensive, and will at present hardly bear comparison with the series in other large Museums; but nevertheless Mr. Southwell profitably devotes thirty-eight pages of 'The Guide' to this section, illustrating his remarks with portraits of the Bower Bird, Flamingo, and Apteryx. The sixth order, the *Psittaci*, seems to be the best represented of any, *viz.* by six of the "Kakapo," or Owl Parrot of New Zealand (*Stringops habroptilus*), in one case, presented by Mr. Haldinstein, and three of the sheep-killing Kea, *Nestor notabilis* (about to partake of a dead lamb) in another—a cleverly mounted group. But most of all worth looking at is the modest little shade, beneath which is the extinct Phillip Island Parrot, *N. productus*, whose range at no time extended beyond this one little Australasian island, said to be but five miles in circumference. There are few narratives in the early volumes of 'The Zoologist' more curious than that of the man who shot the last *Nestor productus* on Phillip Island (Zool. 1854, p. 4298), communicated to my father in a letter from Mr. Strange, of Sydney.

In 1892 a notable donation of eighty-six bird-skins, referable to fifty-nine species, collected during the exploring expedition of H.M.S. 'Challenger,' principally from Kerguelen Island, Australia, and Southern Ocean, were presented by the Lords Commissioners of Her Majesty's Treasury, through Mr. T. Digby Pigott, C.B. A few only of these have at present been mounted, the remainder being preserved amongst the skins, where they are to be seen on application. Mention may also be made of three fine Emus, and the White-billed Diver (*Colymbus adamsi*), recently obtained in Norway by Col. Feilden, a species which one of your correspondents, I observe, has just added to the Norfolk list (Zool. 1896, p. 14) on the strength of a specimen preserved in the Booth Collection at Brighton.

There are several good skeletons of birds, and in the Keep a large table-case of feather capes and tippets worn by the South Sea islanders and other natives, some of them from South Africa, presented by the Baroness Berners.

The Mammalia.—Amongst the more interesting objects here are a pair of Himalayan Bears, a large West African Chacma Monkey, a splendid Moufflon from Cyprus (presented by Sir Henry Bulwer), various interesting beasts from Lord Hastings's Collection and the Trustees of the National Museum at Melbourne, a three-months'-old Lion cub (bred in Bostock's menagerie), and the skull of *Phoca hispida*, captured on the Norfolk coast, and bought by my father in Norwich fish-market. There are several others which Mr. Southwell mentions, including the Beavers, which, when liberated in Sotterley Park, "made themselves quite at home, felling trees to construct a dam after their manner," and the gnawed tree-stool in the Museum is their work. In one corridor a number of skeletons will be found, and among them Mr. Southwell enumerates—Lioness (two), Polar Bear (Capt. Manby), Leopard, Camel, Zebra, and Fallow Deer; also two very large and perfect tusks of the African Elephant, and an enormous head of the same in the Geological Room.

The addition of some life-size models of Cetaceans, accurately painted after nature, would add very much to the attractions in this department; good models, such as they have in the British Museum, being even better, for museum purposes, than the creatures themselves; but unfortunately want of room is already a serious consideration.

The Ichthyological Collection.—The collection of Fishes is a pretty good one, comprising a fine Maigre (taken at Sheringham in 1841), Spanish, Pomeranian (Cossey), and Ray's Bream (Yarmouth), Deal Fish (from T. J. Mann, Oct. 1879), large Opah, Wolf Fish, Long Rough Dab (A. Patterson), "double Turbot" (A. P.), and head of Sword Fish. In spirits, following Mr. Southwell's enumeration, are *Cottus grœnlandicus* and *C. scorpius* (A. Patterson), from Yarmouth, and the rare Rose Perch* (*Scorpæna dactyloptera*); while, since Mr. Southwell's account was written, the Earl of Orford has presented a Florida Tarpon, or Silver King, which weighed 140 lbs., with the rod and line with which he caught it.

The Picture Gallery does not contain much of interest to naturalists, and the Hall, devoted to Geology, hardly calls for notice in the pages of 'The Zoologist.' But one can scarcely pass, without reflecting on ages gone by, one enormous fossil tusk, nearly 10 ft. long, from Cromer, supposed to have belonged to a Mammoth Elephant 16 or 17 ft. high, and an immense humerus, which for size might have belonged to the same animal.

The cabinets of Insects, rearranged by Mr. C. G. Barrett, with additions by Lord Walsingham, are very good. The Hymenopterous Insects are all the gift of Mr. Bridgman. The Lombe-Taylor Collection of Shells was noted in its day. Finally there is the giant Galapagos Island Tortoise, presented to the Museum alive in 1843, when it was no rarity; and a well-arranged Herbarium, with supplementary collections formed by Sir J. E. Smith and Sir James Paget.

THE RABBIT-PLAGUE IN AUSTRALIA.

Nothing lately has been heard of the Rabbit-plague in Australia, and, to judge by the enquiries which continue to reach us, it appears that there are many who would be glad to learn how this matter now stands.

The attention of our readers has been already directed to the subject on several previous occasions.

In 'The Zoologist' for 1888 (pp. 321–328) we gave an account of the original introduction of the Rabbit, in 1860, in the western district of Victoria, for the purpose of sport, and its subsequent spread to other parts of the country, resulting in an enormous increase of numbers during the succeeding twenty years, and incalculable damage to sheep-farms and crops. We remarked that during the years 1884, 1885, 1886, the Government had expended in the extirpation of Rabbits in Victoria about £30,000, chiefly by poisoning with phosphorized oats and wheat, arsenic in bran and chaff, and bisulphide of carbon, and by paying 3d. a dozen on all skins or scalps of Rabbits produced to the agents. In this way, at least 157,000 dozen were brought in (equal to 1,884,000 scalps and skins) and paid for in two years.

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* See Zool. p. 79.

In New South Wales the sum voted by Parliament in 1886 for the destruction of Rabbits was £74,000, and in South Australia £30,000. The area infested in Victoria was stated to be about 20,000,000 acres, more or less; and the estimated loss during ten years incurred by the destruction and abandonment of sheep-runs, consequent loss of wool, skins, and other profits arising from this source, was set down by Mr. Morgan, the United States Consul-General at Melbourne, Victoria, at something like £3,000,000 sterling.

It was under these circumstances that the Government of New South Wales was induced, in August, 1887, to offer a reward of £25,000 for a satisfactory method of destroying Rabbits wholesale, provided the method were new and effective, and at the same time perfectly harmless to domestic animals. It was this offer which induced M. Pasteur to make the experiments which we have already described (Zool. 1888, pp. 326–327), and eventually to claim the reward, if allowed to apply his method in his own way, through a properly instructed agent.

We need not here refer to the Rabbit-pest in New Zealand, as to which we have already furnished statistics (Zool. 1888, p. 325), and a report on the remedial methods adopted in that country (Zool. 1889, pp. 323–334). Our concern at present is only with the question whether M. Pasteur's method was ever adopted and carried out in Australia; if so, with what measure of success; if not, why not.

We believe it to be a fact that M. Pasteur, having satisfied himself by experiment in a Rabbit warren near Rheims that he could produce a fatal epidemic amongst Rabbits by inoculating them with so-called "chicken cholera" (which he communicated by cultivating the microbes producing it and introducing them amongst the vegetable food given to the Rabbits), announced to the Government of New South Wales that he was ready and willing to prove the efficacy of his discovery by actual application of the method in that colony.

With that object, his son-in-law, M. Valery Radot, with a skilled assistant, set out for Sydney "with large supplies of the choleraic microbe," and would have proceeded to carry out their object had they been permitted to do so by the colonial Government. At the last moment it would seem that a reaction set in. Those who had hailed with satisfaction the announcement that a remedy for the Rabbit-plague was at hand, now paused to consider whether, after all, the proposed cure might not prove worse than the disease. The result of the deliberation was that the experiment was not permitted to be carried out, and M. Pasteur's assistants had to return home without the expected reward, though we presume, of course, that all their expenses were paid by the Government on whose behalf they had undertaken the voyage.

We have been asked to state why M. Pasteur's proposed remedy for the Rabbit-plague was not adopted and applied in Australia. The fact appears to be that on the eve of the arrival of his assistants at Sydney, certain resident members of the medical profession, feeling it incumbent upon them to examine into the matter carefully before committing themselves to an opinion which they were asked or expected to express, arrived at a conclusion adverse to the adoption of M. Pasteur's proposed experiment. Amongst those who strongly opposed the project was Dr. H. C. Wigg, who, in a paper read before the Royal Society of Victoria, in March, 1888, stated the principal objections to the scheme.

As his views may be taken to be those of others besides himself, and as they undoubtedly embody some serious objections, it may be well to quote them here, for the benefit of our readers, who will then be in possession of the whole story; for hitherto, as some of them have pointed out, they have been furnished only with statistics relating to the introduction of the Rabbit in the Colonies, the damage caused by such unwise introduction, the cost incurred by the Government in attempts to stamp out the plague, and the nature of the remedy proposed by M. Pasteur.

In opposing the scheme, Dr. Wigg wrote as follows*:—

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* Proc. Roy. Soc. Victoria, 1889, pp. 28–33.

"The loss, and even desolation, caused in many parts of this country by the excessive multiplication of Rabbits, and the great reward of £25,000 offered by New South Wales for their extirpation, have induced many efforts to discover a cure for the plague.

"Of these the most important has been that of M. Pasteur; but his proposed remedy is so uncertain, and at the same time contains such elements of danger, that I have thought it right, as a matter of urgency, to direct the attention of the Royal Society to the subject.

"He has discovered that a certain virulent epidemic disease, found in France and parts of the Continent, and called the 'fowl cholera,' can be easily communicated to Rabbits, and with fatal effect. The poison of this disease he intends to scatter broadcast throughout the colonies, hoping in this manner to destroy the Rabbits everywhere.

"It is this scheme, the prospects of its success, and the grave risks attending it, that we have to consider.

"His plan is to obtain the microbe, which is the effective cause of the disease; to cultivate it in properly prepared infusions, until he has multiplied each single particle of the poison into hundreds of millions, and then to spread it over the ground, or over food prepared for the Rabbits. The microbe is a living being, extremely minute, and found in the blood of diseased animals; and it is supposed that there is a special one for each form of disease. There is much difficulty in saying whether it is vegetable or animal.

"It is now nearly forty years since microbes were first noticed by Davaine, but their real importance as factors in disease was not recognised thoroughly until 1877, when the celebrated paper of MM. Pasteur and Joubert was read before the Academy of Sciences.

"These gentlemen selected anthrax, a disease affecting men and cattle, called in the first case 'malignant pustule,' and in the second 'splenic fever,' and showed that in the blood myriads of these little organisms were found, either as slender waving rods, or minute oval spores, or as curled filaments; and also proved that the poison, if it existed in these, could be cultivated out of the body to an indefinite extent, without losing any of its infectious virulence. The method was this:—A neutralised decoction of yeast in water was strained and heated so that all germs in it were destroyed, and a drop of the diseased blood was then placed in it. After a day or two it was full of the microbic growth, and a single drop let fall into a fresh quantity of yeast-water produced a second crop, and so on. Of course the latter cultivations give the microbe free from any foreign matter, and it is from these that its form is best studied. Over fifty successive cultivations of the anthrax microbe have been made, and the last one was as virulent as the first. I spoke of the spores of the microbe. While the active form is very sensitive to degrees of heat (the typhoid microbe being very inactive at low temperatures, and the anthrax microbe inactive at high ones), the spores, the seeds as one might call them, which form when the protoplasm of the active plant is drying up, can endure the greatest heat and cold, and could be swept in dust-storms from one end of the colony to another, carrying disease and death for thousands of miles.

"This should be borne in mind when we consider the proposal to carry on the experiments 'safely' here within walled paddocks. We might as well build a post and rail fence to keep out the cholera, or attempt to enclose smallpox within open wire network. Even an island would not secure safety, for the germs might be blown across, or be carried on a boat, or on the clothes and hair of the experimenters. This is one of the great dangers —once admitted, the disease is practically uncontrollable.

"There is another point that I will ask you to bear in mind, as upon it hinges all the value of the experiments held on Sheep that we have received by a recent mail, and which are to prove that they could not be attacked by the disease. I quote the words of M. Valery Radot, M. Pasteur's son-in-law, and his recognised organ:—'Easily inoculable and fatal to the Ox, the Sheep, the Rabbit, and the Guinea-pig, splenic fever is very rare in the Dog and Pig. These must be inoculated several times before they contract the disease, and even then it is not always possible to produce it.' He proceeds to state that fowls never take it, but that if they are artificially chilled they do take it easily—(the logic is not mine)—and it proves exceedingly fatal to them. Now all this simply shows that, under varying circumstances of temperature, and of intensity of the contagion, the microbe affects different animals, *including those rarely susceptible, and those supposed to be never susceptible to its influence.*

"Now for the Rheims experiments, to which so much importance has been attached. A walled-in vineyard of nineteen acres (eight hectares) was greatly infested with Rabbits, and when they had multiplied so much that there was not sufficient herbage left to keep them from starvation, the amiable old lady to whom the place belonged had them fed each day with hay and dry clover. After some time, however, even she found that it was too much, and called in M. Pasteur, who saturated the food with his cholera-poisoned broth, and in two or three days there were hardly any of them left. That is, that famished Rabbits within an enclosure and accustomed to artificial food, one day find that food poisoned, and die accordingly, a result that might safely have been predicted even by non-scientific people; and that is all. One reason why this experiment was not dangerous and, indeed, probably why it was allowed to be performed at all: it was not done in summer, and still less in the fierce heat and far-sweeping dust storms of our plains; it was done in the depth of a French winter, and amid falling snow.

"Again, he inoculates one or more Sheep, and allows others to be in the fields with the poisoned Rabbits, and says they cannot take it because they did not become infected then; but this, too, was done in the depth of winter; and all know how much the action of zymotic poisons is affected by season and temperature.

"Information has been withheld as to what Birds it attacks, and whether we may expect to lose our domestic poultry of every kind. It is, however, pretty certain that we shall lose our native insectivorous Birds, and with them the only restraint we possess over Locusts and Grasshoppers, which, no longer checked as they are now, might become a plague far worse than the Rabbits. But it will naturally be said, If such things happen here, how is it that they do not occur in France? The answer to this question is twofold. In the first place, whenever a new disease falls upon virgin soil adapted to its growth it extends with singular rapidity and virulence, and that whether the disease be in man, as smallpox, or in the earth, as thistles and brambles. After a time, however, and often after the most frightful ravages, the disease appears to have consumed either the whole or a very large portion of the special material required for its growth, and then either disappears altogether, or is confined within moderate bounds. A most striking example of this is within the memory of all. In 1874 King

Thakombau left Fiji to pay a visit to the Governor of New South Wales at Sydney, on the occasion of his cession of his realm to the British Crown. While there he contracted measles, a disease entirely unknown in Fiji; and unfortunately returning home before he was free from the microbes, these minute particles spread to his immediate attendants, and grew and multiplied in them, till at last the disease swept like a storm over the islands, and no fewer than 40,000 people out of that small population died from its effects. After four or five months the epidemic ceased in its virulent character, and now measles there is scarcely more severe than in Europe.

"In the same way, I am informed that the growth of the briar-rose in Tasmania, which at one time threatened such great mischief to that colony, is now far more easily controlled than at first; and that thistles in Victoria—partly, no doubt, through the special legislation, but partly also from the exhaustion of certain ingredients in the soil—are becoming greatly restricted in area. Now in France the plants, the animals, the diseases have, for thousands of years, been adapting themselves to each other, and, if I might use a rather far-fetched simile, they have established a *modus vivendi*.

"Here we have new birds, new animals, a virgin soil, and new climate conditions. Who can tell what results will occur when these are brought into contact with a new choleraic disease? Next, besides the fact that in France the choleraic microbe is on a worn-out soil,—worn out for its own purposes, I mean,—we must remember that the frosts and snows and rains of the long winter there are unfavourable to the extension of the microbe, while in that country of small farms, where every range of trees, every growing field, acts as a filter, the conditions are totally dissimilar to those on our vast sweeps of plain, 'growing weather' all through the winter, and dust-winds raking the country straight down from the Rabbit-infected fields to the fertile districts of the coast. Is there, then, any certainty as to what would be the result of the introduction here of this poison? There is no certainty. Microbes of some of the most malignant diseases are sterile in certain countries; thus, although typhus fever is endemic in England and Ireland, we have never had one case in Australia—it seems as if it could not live out here; and the poison of the yellow fever of America dies out rapidly in England.

So it may be with the chicken-cholera in the colonies; but that is only a remote chance, and—no one knows.

"Lastly, is there any reason why we should endanger our flocks, our green crops, the whole prosperity of the country, at a word from M. Pasteur? He is a man who has done brilliant scientific work, especially in the diseases of silk-worms, the diseases of wine, and the investigation of zymotic disease, but who has the intensely French passion of pushing great ideas farther than they will go.

"A few brief references to his last great work, the cure of hydrophobia, will illustrate my meaning, and at the same time give us a salutary caution as to believing too much of what we are vaguely and grandiloquently told about his successes. He attenuates the virus of mad dogs by passing it through the systems of a rabbit and a monkey, and then injects with modified cultures, usually from the monkey's brain, into men and dogs as a protective and curative measure. For a year or two all went on well, and one enthusiastic writer even declared that he had 'built' (upon mad dogs) the 'eternal temple of his fame.' Centres for mad-dog vaccination were established at Vienna, Buda-Pesth, and half-a-dozen other towns; and in March, 1886, we find from the 'Lancet' that 350 cases had been treated by M. Pasteur, and that but one death had occurred, and that in a case recognised as very serious from the beginning. On 15th May we find that three persons more have died from one set alone. On 12th June another is dead; on 21st August a boy is dead; on 28th August three more boys, two French and one English; on 4th September a patient dies; on 13th November another, and so on. Then at the end of December the statistics of the Pasteur Institute for the previous fourteen months are published, and we find that 31 of the patients are dead; but it is conclusively proved to us in the report by figures (which cannot lie) that during this period M. Pasteur had saved the lives of 163 of his patients. This was a truly great result, and would have excited much admiration, had not Professor Peter, of the Hôpital Necker, pointed out from the vital statistics that the average mortality for the whole of France before the discovery of the infallible cure was 30 per annum. And to obtain this result, thousands of men and women, many never bitten by rabid animals at all, have been inoculated with the virus and are scattered all through France.

"The poison intended for us is now on the ocean, and scarcely a fortnight's sail from our shores. Two of M. Pasteur's assistants are on board the 'Cuzco' with large supplies of the choleraic microbe, and perhaps even the germs of other diseases as well. The opinion I offer to you, and which I hope that you as the leading scientific body in Victoria will confirm, is that our Government should immediately take steps to make not only the introduction but the use of these things highly penal. It seems to me that in trifling with such diseases we should be rushing blindly towards a precipice, and what lies in the darkness beyond it no man living can say."

Whether it was this report which decided the Government of New South Wales to prohibit the proposed experiment by M. Pasteur's representatives in the colony we are not informed; but there can be little doubt that it threw considerable weight into the scale of the oppositionists. At any rate the experiment was not made, and the principal sufferers by the depredations of Rabbits in Australia were left to seek some other and (as the oppositionists would say) less risky remedy than that of M. Pasteur.

What we should now like to know is, What is the present *status* of the Rabbit at the Antipodes after all these vicissitudes of fortune?

NOTES AND QUERIES.

MAMMALIA.

Hedgehogs in Winter.—With reference to Mr. Grabham's note (p. 76), I may state that I once in winter observed for some minutes an old Hedgehog searching about among some dead leaves, which were partly covered with snow some days old, and this during a prolonged spell of frost. The leaves were in a slight hollow ten yards from a hedge. From this I infer that the Hedgehog does not hibernate.—CHARLES A. WITCHELL (Eltham, Kent).

Bank Vole in Jersey.—During a brief stay at St. Helier, Jersey, on January 2nd, I caught a couple of what appear to be perfectly typical examples of the Bank Vole, *Evotomys glareolus*. I do not know if this species has been previously recorded from Jersey or the Channel Islands.—G. E. H. BARRETT-HAMILTON (Savoy Mansions, W.C.).

BIRDS.

Can Woodpeckers see in the dark?—My reason for asking this question is as follows:—Some time ago I found a nest of the Green Woodpecker, *Picus viridis*, the hole being bored in the trunk of a large ash tree, about 15 ft. from the ground. After tapping the tree with a hammer to ascertain the situation of the nest, I decided to cut a circular hole with a chisel about 1 ft. below the entrance, and a very tedious operation I found it, as I had to cut through nearly seven inches of very hard dry wood before I reached the nest, which, to my great disappointment, contained only one solitary fresh egg. Deeming it advisable to take it, as in all probability the bird would forsake the nest, I removed it very carefully, and substituted a newly-laid Thrush's egg, on the chance of the bird returning and laying to it, closing up the hole I had made with a 3½-inch bung, filling up the crevices with stiff clay, and rubbing some brown wood-dust over the outside to make it look as natural as possible. On returning a few days later, I tapped the tree with my stick, and was much pleased to see the Woodpecker's head appear cautiously at the mouth of the hole, when on seeing me she flew away: upon which I reascended the tree, removed the bung, and to my surprise found four more fresh eggs. Now comes the point of my question, for, instead of laying to the Thrush's egg, I found that the bird had cast it out of the nest and deposited it at the far end of the passage I had cut, close to the bung; in fact, so close that had I not removed the bung very carefully it would have fallen to the ground. Now what I do not understand is, how the bird knew that it was not its own egg. The hole was only just large enough, as usual, for the bird to squeeze in, and therefore, when once it had entered and filled up the passage, the nest must have been in total darkness; and, unless it could see in the dark, it is difficult to imagine how it detected the fraud, for the two eggs being about the same size and shape would, I should have thought, have been quite indistinguishable to a bird of that family in the dark. Of course the texture of the shells is slightly different, but surely a bird would not be able to detect that either in the dark. I have found the plan of boring a hole opposite the nest and closing it with a bung to answer admirably in the case of most birds that nest in the holes of trees, and adopted it often when I was in India with great success, especially with Barbets, Parroquets, Tits, &c. (*vide* Oates' edition of 'Nests and Eggs of Indian Birds,' vol. ii. p. 326, under the head of *Cyanops viridis*, the Lesser Green Barbet).—E. A. Butler (Brettenham Park, Ipswich).

Early Nesting of Herons.—Owing to the unusual mildness of the present winter, Herons commenced breeding very early, indeed earlier this season than I can ever remember. By Jan. 15th I observed them haunting their old nesting-places, and the unearthly sounds proceeding from them both day and night while about the trees indicated that pairing had commenced. By Feb. 1st several pairs had eggs, while others were only building. There are three separate colonies here, in three small woods a few hundred yards apart, separated by pasture and tillage fields (the birds building chiefly on firs, though occasionally on sycamores), and one nest by itself on a sycamore in a grove close to a garden not forty yards from a cottage, where we had excellent opportunities for observing the birds during their building operations. It is strange that this pair of Herons should have selected a site so close to a house, while they had numerous trees to build on in more secluded groves. The temperature in January was very mild, the maximum for the month being 48°, the minimum 37½°.—Robert Warren (Moyview, Ballina).

[For a note on the early nesting of Herons, see Young, Zool. 1884, p. 191.—Ed.]

Heronry near Beckley, Sussex. — Unfortunately, the well-known heronry at Great Sowden's Wood, Brede, can no longer be described as "one of the largest in England" (Borrer, 'Birds of Sussex,' p. 312; see also Yarrell, 'British Birds,' 4th ed. vol. iv. p. 167; and Rowley, Orn. Misc. vol. iii. p. 65, where will be found two pictures of this heronry), insomuch as this year it is entirely deserted, not a single pair having returned to breed. In 1840, 400 nests might be counted, while twenty years later scarcely 200 remained (*vide* letter from owner, Mr. E. Frewin, to Dr. Arnold, 'Sussex Archæological Collections,' vol. xxvii. p. 114). During the last few years the numbers have steadily decreased, a consequence, I believe, of the erosion of some of the timber. It is, however, with no little gratification that I am able to report that the birds have established a settlement in Alder Shaw, the property of Capt. Pennifather. Alder Shaw is an oak wood of eight acres, situated north-east of the Sowden wood, and near the village of Beckley. On March 1st the owner and I counted seventeen nests, fifteen of which were at the time occupied, the birds presumably performing the duty of incubation. The Herons arrived unusually early this year, *viz.* on Jan. 28th, which is quite three weeks earlier than last year. The settlement (of which this is, I believe, the first notice appearing in print) was commenced in 1892, when three pairs migrated from Great Sowden's Wood. By 1895 this number was increased to fourteen, and I am told that at least a hundred young were safely reared. The nests are placed in the tops of oaks, at a height of thirty to forty feet. Happily, Capt. Pennifather takes great interest in the colony. My friend Mr. Thomas Parkin informs me that it is likely that some of the Herons have migrated to Iden Wood, near Rye. If this surmise be correct, an old heronry is revisited, for "Edward I. had one in his manor of Iden, which he reserved to the crown, when, in 1297, he granted that manor to Robert Panlyn, one of the barons of Winchelsea, for life" (Sussex Archæol. Coll. xvii. p. 122). — W. Ruskin Butterfield (St. Leonards-on-Sea).

Red-throated Pipit in Sussex.—I have lately added to my collection an adult male example of the Red-throated Pipit, *Anthus cervinus*, which I procured through Mr. Bristow, of St. Leonards, near which place it was shot on Nov. 13th last. As Dr. Bowdler Sharpe, in his recently published volume on the Birds of Great Britain in Allen's 'Naturalists' Library,' discards the doubtful specimen from Unst in the collection of the late Frederick Bond, the present specimen may be regarded as the third authentic instance on record for Great Britain. As this is a bird which, in its winter dress, might be easily passed over as a Meadow Pipit, *Anthus pratensis*, it may be of interest to point out its distinguishing characters. It is much paler in colour than *pratensis*. There is a well-defined pale streak over the eye; the wing-coverts are broadly margined with pale buff, which forms two bars; the outer tail-feathers are conspicuously white; the dark markings to the centre of the feathers on the back are very bold, and the legs and toes dirty white. A bird which has been mounted since November last might when quite fresh have had the legs tinged with flesh-colour. Looked at separately, it resembles *A. pratensis*, but placed among a few of these birds its distinguishing features are readily observable. Indeed I feel sure that, in the field, I could single out one among a flock of *A. pratensis* without the aid of a field-glass. This specimen has been inspected by Prof. Newton and Dr. Bowdler Sharpe, who are both satisfied as to its correct identification. I may here state that, during my recent visit to the west coast of Ireland, I shot on Achill Island a specimen of *A. pratensis* with a distinctly rufous throat. It was a male and in rather worn plumage. All the Meadow Pipits I saw there struck me as being rather paler in general coloration than those I am accustomed to see in my own neighbourhood.—F. Coburn (7, Holloway Head, Birmingham).

Eider Duck in Gloucestershire.—It may perhaps be worthy of record that on Feb. 12th two Eider-ducks, both males in perfect plumage, were shot on the small reservoir at Witcombe, which lies in a hollow below the Cotswolds, about five miles S.E. of Gloucester. The condition of their feet and feathers is strong evidence that they had not escaped from confinement, their crops also contained nothing but a few small sea-shells. Probably their presence at such a considerable distance from the sea is to be accounted for by their having travelled northwards up the Severn estuary, and thus become bewildered when they found themselves losing touch of the sea; but their occurrence at all so far south in a winter so singularly mild seems remarkable. The birds are now being preserved by Mr. White, of this town, and will be placed in the Cheltenham College Museum.—Francis J. Cade (Thirlestaine Villa, Cheltenham).

[On referring to Witchell's 'Fauna of Gloucestershire,' 1892, we find no mention of the Eider-duck as a visitor to that county.—Ed.]

Shoveller in Somersetshire. — A fishmonger in Bath showed me a pair of young Shovellers, *Anas clypeata*, male and female, which had been shot near Keynsham about the beginning of January last. As I have never heard of these birds having been shot near this locality before, the fact may be worth recording.—C. B. Horsbrugh (4, Richmond Hill, Bath).

[In Cecil Smith's 'Birds of Somersetshire' (p. 477), the Shoveller is mentioned as "a rather rare occasional visitor to the county, making its appearance generally in the winter and early spring."—Ed.]

Abnormal Nesting of the Willow Wren.—I have seen mentioned in 'The Field' and elsewhere that the Willow Warbler sometimes, though rarely, nests in ivy on old walls. As the nesting-season of 1896 will soon be with us, I should like to put before readers of 'The Zoologist' a strange instance of this, which took place during my nest-hunting experience. Some years ago, in 1884, I think, I was shown a nest of the Willow Wren in a position such as I have indicated, in the ivy mantling the ruins of an old church. The nest was inside the building. The eggs, of which five were laid, were very brightly spotted. A similar nest was built, in exactly the same place, in May–June, 1893, but none, so far as I know, in the intervening years. Is it not rather strange that these birds should have come back to their old nesting-place after an interval of nine years, assuming that they were the same pair, the truth of which, however, I had no means of certifying? The eggs in the latter case were very ordinary specimens of the Willow Wren, so that there is practically little doubt as to the identity of the birds. In connection with this I would like to mention another strange nesting-place of the Willow Warbler, which came under my notice in 1884. Two of the nests of this species were built in the upper part of a hawthorn hedge. That they were nests of the Willow Wren is the only conclusion I can come to, for I do not think we have the Chiffchaff or the Wood Wren in the district to which my notes refer —on the north shore of the Solway; and the nearest nesting-place of the Grasshopper Warbler to this particular spot is in the woods along Kirkcudbright Bay, some miles off. In any case it is a very unlikely situation for the Grasshopper Warbler. The nests were not at a great distance from each other, domed; and the eggs were lightly spotted with reddish yellow. The hedge was beside a wood frequented by a few Willow Wrens; at the root of the hedge a rabbit-warren; the place a probable haunt of Weasels. It is just possible that this last consideration had something to do with the situation chosen.—J. W. Payne (Edinburgh).

Hybrid Linnet and Siskin.—At a meeting of the Linnean Society, held at Burlington House on Feb. 28th, Mr. John Young exhibited a mounted specimen of a hybrid between a Siskin, *Carduelis spinus*, and

Linnet, *Linota cannabina*, of which he believed no example had been recorded. The bird in question had been reared by Mr. George Davis, of St. Aldate Street, Gloucester, who stated that the male parent was the Siskin, and that previous to nesting, the birds had been kept together in the same cage for six months. The case, of course, would have been more remarkable had the hybrid been met with in the wild state.—Ed.

Variation of Habit in the Blue Titmouse.—Early in February last, near New Eltham, and about 8 a.m., I noticed two Blue Tits, *Parus cæruleus*, flying from tree to tree along the road in the direction of my walk. The leading bird, which appeared to be a male, frequently uttered call-notes; the other, which I presumed to be a female, was comparatively silent. The leading bird, after flying for a little distance in the usual jerky manner of the species, would suddenly extend his wings and hold them motionless, so that he might be said to soar along, in which position the upward curving of the long feathers was clearly visible. Sometimes he travelled in this way for only a few feet, sometimes for as much as ten yards. Once when he was sailing along a male House Sparrow flew at him, and made three or four attempts to peck him in the air; but the Tit with much agility avoided the attack, and he then perched in a chestnut tree, closely followed by the Sparrow; but the latter, though not more than a foot distant from the Tit, took no further notice of him. On the following morning, near the same place, I saw two Blue Tits, and one of them came from a position about half-way up an elm-tree, and descended in a graceful swoop on motionless wings to a lamp-post on the other side of the road. On no other occasion have I seen any Titmouse exhibit this peculiar gliding flight, which in this case was presumably intended for the purpose of display; but if such behaviour is likely to incite the attacks of other species, it probably will never become prevalent in the Tit. It is, of course, with some other birds habitual.—Charles A. Witchell (Eltham, Kent).

Red-backed Shrike: Correction of Errors.—As I was unfortunately unable to revise the proof of my article on the Red-backed Shrike (p. 70), I should be much obliged if readers of 'The Zoologist' would make the following corrections in it:—A passage at the bottom of p. 70, beginning with the words "and I may add," and ending at the top of p. 71 with "parts of the body," should have formed a foot-note. This passage should therefore now be enclosed in square brackets. On p. 73, line 3, *for* mouth *read* mantle. Same page, line 37, *for* nesting *read* nestling. On p. 74, line 14, *for* to the webs *read* both webs.—O. V. Aplin (Bloxham, Oxon).

FISHES.

Tunny Fish in the Solway Firth.—The appearance of a Tunny (*Orcynus thynnus*) of considerable size in the Solway Firth is perhaps deserving of notice in 'The Zoologist.' The fish in question was stranded among the numerous sandbanks of the Firth, near Silloth, on Feb. 24th. Its arrival was at once reported to me, and I had the pleasure of examining it early on the following day. It proved to be a male fish, full of milt. The total length was considerably less than some that have been taken at different times on other parts of the coast. Nevertheless, the fish measured 7 ft. 9 in. in total length, its greatest girth being 5 ft. 2 in. It weighed 28 stone, and was in splendid condition. The entire fish, all but the skin and viscera, was eaten, being distributed, to all who cared to try it, in the town of Penrith, whither it was taken for preservation. The flesh was found to be as rich as salmon. Many who tasted it compared it to veal. The stomach only contained five partly digested vertebræ of some other species of fish.—H. A. Macpherson (Carlisle).

SCIENTIFIC SOCIETIES.

Linnean Society of London.

Feb. 6th.—Mr. C. B. Clarke, F.R.S., President, in the chair.

The Rev. E. Woodruffe-Peacock, and Mr. William Cole were admitted, and Messrs. J. Backhouse, Gilbert Christy, and I. Richards were elected Fellows of the Society.

Sir W. H. Flower, K.C.B., F.R.S., presented to the Society, on behalf of the subscribers, a portrait of Mr. William Carruthers, F.R.S., ex-President of the Linnean Society, painted by Mr. J. Hay. On the motion of Mr. J. G. Baker, F.R.S., it was resolved that the portrait be accepted, and that a cordial vote of thanks to the donors be recorded.

Prof. C. Stewart exhibited a series of dissections of skulls, illustrating the development of air-cavities. The skull of a Herring carefully dissected to show the relations of the ampullæ of the pneumatocyst to the cranial bones; of a Crocodile, to show those of the extra-tympanic cavity and siphonium; of a Rook, to show the limitations and relationships of the vesicular and other strata of the cranial roof; and of a Chinchilla and a *Phascolarctus*, to illustrate the variations and development of the "bulla" and of its associated structures, were the chief objects shown. Prof. Stewart expressed himself favourable to the belief that the parts mentioned in the Herring are functional for acoustic purposes. In this he was supported by Prof. Howes, who referred in detail to the arrangements occurring in *Hyodon* and *Mormyrus* as substantiating this conclusion.

On behalf of Mr. B. G. Cormack, Dr. D. H. Scott gave the substance of a paper on Polystelic Roots of certain Palms. He remarked that with scarcely any exception roots show one normal vascular bundle or stele. The author, utilizing material from Ceylon, found that in *Areca catechu*, Linn., *Cocos nucifera*, Linn., and a species of *Verschaffeltia*, the young roots agree with this condition, but on examining older and thicker portions of the same roots he found many steles present. After discussing the origin of this, the author considered the change to be primary, not secondary, and suggested that these roots might serve as props to the stem. The paper was criticised by Mr. George Murray and Prof. Trail, Dr. Scott replying to objections.

Mr. R. Morton Middleton then read a paper on a remarkable use of Ants in Asia Minor, communicated by Mr. Miltiades Issigonis, of Smyrna. It was stated that the Greek barber-surgeons of the Levant employed a large species of ant for the purpose of holding together the edges of an incised wound. The ant, held with a forceps, opens its mandibles wide, and being then permitted to seize the edges of the cut, which are held together for the purpose, as soon as a firm grip is obtained the head is severed from the body. Mr. Issigonis had seen natives with wounds in course of healing, with the assistance of seven or eight ant's heads. The species of ant referred to was a large-headed *Camponotus*, not unlike one found in India. Mr. Middleton recalled the fact that a similar observation concerning an ant in Brazil had been recorded many years ago by Mr. Mocquerys, of Rouen (Ann. Soc. Entom. France, 2 ser. ii. lxvii), as quoted by Sir John Lubbock in his work on 'Ants, Bees, and Wasps'; but the observation, strange to say, had not been confirmed either by Bates or Wallace during their travels in South America. Dr. John Lowe pointed out that in this operation apparently no attention was paid to the usual antiseptic precautions, which are regarded as indispensable in modern surgery. Sir William Flower considered the observation of much interest from an ethnological point of view, as showing the independent existence of the same custom in countries so far apart as Brazil and Asia Minor.

Feb. 20th.—Mr. C. B. Clarke, F.R.S., President, in the chair.

Messrs. O. V. Aplin, Gilbert Christy, and W. O. Stenteford were admitted Fellows of the Society.

Mr. Clement Reid exhibited a collection of Acorns planted by Rooks, and made remarks upon the agency of these and other birds in the dispersal of seeds. A discussion followed, in which the President and Messrs. Cole, Druery, Harting, and Kirby took part.

Mr. Bernard Arnold exhibited and made remarks upon an abnormal growth of *Dactylis glomerata*, Linn., gathered at Shorne, near Gravesend, followed by remarks from Messrs. B. Daydon Jackson and H. Groves.

Mr. W. H. Lang exhibited under the microscope Prothalli of several varieties of *Nephrodium Filix-mas*. These illustrated the apogamous production of the sporophyte which has been described in this species by De Bary and Kny. Dr. D. H. Scott and Mr. C. T. Druery took part in the discussion which followed.

On behalf of Mr. John Young, there was exhibited an unprecedented case of hybridism between *Carduelis spinus* and *Linota cannabina*, the former being the male parent. Some remarks were made on the subject by Mr. Harting, who took occasion to exhibit, on behalf of Captain M. Murphy, another hybrid, *viz.* one between Blackgrouse and Pheasant, which had been shot near Bunessan, Mull, in the month of January last.

On behalf of Mr. E. J. Lowe, a paper was read by Mr. Druery, in which details were given regarding the culture of divided and re-divided Prothalli of *Scolopendrium vulgare.*

Zoological Society.

February 4th, 1896.—Dr. A. Günther, F.R.S., V.-P., in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of January, 1896, and called special attention to a young male Manatee from the Rio Purus, Amazons, and to two young King Penguins in down plumage from Macquarie Island, New Zealand, acquired by purchase.

Mr. G. A. Boulenger read a report on the second portion of the Reptiles and Batrachians collected by Dr. A. Donaldson Smith during his recent expedition to Lake Rudolph, the first portion having been already described. In the present report forty-two species of Reptiles and five of Batrachians were catalogued—of which two Lizards were described as new, under the names *Agama smithi* and *A. lionotus.*

Dr. A. Günther read a report on the collection of Fishes made by Dr. Donaldson Smith during his expedition to Lake Rudolph. From Lakes Rudolph and Stephanie examples of eight species had been obtained. Of these five were found in the Nile basin, and were mostly of wide distribution in Africa; while one (*Distichodus rudolphi*) was new to science. Two other species were also described as new, and named *Clarias smithi* and *Synodontis smithi*, after their discoverer.

Mr. Martin Jacoby offered some remarks on the system of coloration and punctuation in the Beetles of the genus *Calligrapha* of the family *Chrysomelidæ.* He showed that in this genus the colour and punctuation of the elytra seemed to be dependent on each other, so that the markings, no matter what their shape might be, were always surrounded by a row of the punctures.

Mr. F. E. Beddard read a paper on the oblique septa in Birds, in which he pointed out a new character of Passerine Birds. A second paper by Mr. Beddard contained a note upon the syrinx and the ambiens muscle of an African Stork, *Dissura episcopus*, and comprised some remarks upon the classification of the Herodiones.

Mr. R. Lydekker communicated a note on the mode of progression of the Sea-Otter.

A paper by Dr. St. George Mivart contained a description of the hyoid bones of *Nestor meridionalis* and *Nanodes discolor*. As the presence of a parahyal arch had as yet only been met with in the *Loriidæ*, it was interesting to find whether it was present in the other brush-tongued forms, *Nestor* and *Nanodes*. In the specimen of *Nestor* examined, such an arch did exist, and the location of the *Nestoridæ* next to *Loriidæ* was so far justified. In two specimens of *Nanodes*, however, the two processes did not form an arch, and thus its removal from the *Loriidæ* was also justified.

February 18*th*.—Prof. G. B. Howes, F.L.S., F.Z.S., in the chair.

A report was read, drawn up by Mr. A. Thomson, the Society's Head-keeper, on the insects bred in the Insect-house during the season of 1895. Examples of nine species of Lepidoptera were stated to have been exhibited for the first time in 1895.

A communication was read from Dr. A. G. Butler on the Butterflies obtained in Arabia and Somaliland by Capt. Nurse and Col. Yerbury in 1894–98.

A communication was read from Lord Walsingham and Mr. G. F. Hampson, on the Moths collected at Aden and Somaliland by the same naturalists and by other collectors.

Mr. F. E. Beddard communicated (on behalf of Miss Marion Newbigin) a paper dealing with the metallic colours of Humming-birds and Sun-birds. It had been held that these peculiarly coloured feathers played some special part in the economy of the bird, for they could not be of much use for flight owing to the disconnected barbules. The author combated this view, pointing out in the first place that the statement of fact did not apply to all Humming-birds, in the metallic feathers of which the barbules were often connected by ciliæ. It was urged in the next place that the very perfection of the flight of Humming-birds led to correlated variations in feather-structure productive of their especially brilliant metallic tints. The difficulty of the plain-coloured Swifts—possibly near allies of the Humming-birds—was met by the suggestion that the latter have fewer enemies, and had therefore had greater scope of possible colour-variation.

Mr. C. W. Andrews read a note on a skull of *Orycteropus gaudryi*, an extinct species of Ant-bear from the Lower Pliocene deposits of Samos, originally discovered and described by Dr. C. J. Forsyth-Major. Except in size, and in some slight differences in the cranial bones and teeth, which were pointed out in the paper, the extinct form closely resembled *Orycteropus æthiopicus* from East Africa. The former range of *Orycteropus* was much greater than its present distribution, for its remains had been found so far east as Maragha in Persia, and the fauna with which it is associated both there and in Samos extended from Spain probably to Southern China. It seemed, therefore, that though the genus was now exclusively Æthiopian, it might have had a northern origin, and have spread into Africa along with the rest of the Pliocene fauna.

Mr. F. E. Beddard read a paper upon the anatomy of the Scissor-bill (*Rhynchops*), in which the structure of the viscera and muscles of this bird was described. The muscular anatomy was found to differ from that of the Gulls, Skuas, and Terns, and was held amply to justify its separation as a distinct subfamily, *Rhynchopinæ*.—P. L. Sclater, *Secretary*.

Entomological Society of London.

Feb. 5th.—Prof. Raphael Meldola, F.R.S., President, in the chair.

Dr. D. Sharp, F.R.S., Mr. Roland Trimen, F.R.S., and Mr. Walter F. H. Blandford were nominated Vice-Presidents for the session 1896–97.

The Rev. John Hocking, M.A., and Mr. J. C. Moberley, M.A., were elected Fellows of the Society.

Mr. Waterhouse exhibited pupæ and portions of pupæ of a silk-moth, *Antheræa mylitta*, selected from some scores of specimens, which he had opened to see if they showed stages of development agreeing with the examples given by Dr. Spuler, and the results confirmed Dr. Spuler's researches. Some specimens showed the tracheæ, the median vein having two branches, very rarely emitting a third branch in the direction of the radial; other specimens had faint indications of the veins and of the discoidal spot of the imago. Even at this very early stage, the vein branching from the subcostal to unite with the upper radial, and the short branch uniting the second median with the third median veins were distinctly traceable, no tracheæ being yet visible in these branches.

Mr. E. E. Green remarked that in the Trans. Ent. Soc. 1881, p. 601, there was a short paper by the late Prof. Westwood, describing a curious little insect from Ceylon under the name of *Dyscritina longisetosa*. Prof. Westwood believed his typical specimens to be immature. Mr. Green now exhibited what he supposed to be a later stage of the same species, though it differed in some particulars from Westwood's description and figure—notably in the proportions of the caudal appendages. Prof. Westwood had pointed out the affinities of *Dyscritina* with the *Forficulidæ*. This was apparent in the specimen under consideration. Putting aside the nature of the caudal appendages, the insect was essentially an earwig. The specimen exhibited was taken in the Punduloya district of Ceylon, at an elevation of about 4000 feet. Mr. Green said he had more than once seen this insect under loose pieces of bark and in crevices of rocks, and had always been struck by its likeness to an earwig, both in appearance and habits.

Mr. O. E. Janson exhibited a Goliath beetle, from the Upper Congo, which he believed to be the male of *Goliathus russus*, described from a unique female example in the Berlin Museum.

Mr. Blandford referred to the case of the eye of a boy affected with inflammation caused by the hairs of the larvæ of *Lasiocampa rubi;* the attack recurred after an interval of nineteen weeks, and in several continental cases this recurrence of the attack had been found to take place, and in some cases permanent injury to the eye had followed. Mr. Blandford discussed the various kinds of hairs on several caterpillars, certain species having hairs of two kinds, one kind being barbed, and thus having the power to work into the skin. He said that the urticating property of the hairs appeared to be mechanical: there was no evidence of any poison-glands. Mr. Lawford said he had had some difficulty in discovering hairs in the lid, and he thought that the symptoms in the case in question were not to be explained by mechanical irritation alone due to the presence of hairs in the tissues. The subject was a new one to him, and he had looked up all the medical literature bearing on it.

Dr. F. A. Dixey read a paper entitled "On the Relation of Mimetic Patterns to the Original Form." The paper was illustrated by a number of coloured diagrams. Prof. Poulton expressed his gratification that the Hope Collection under his charge had afforded material for the work. He thought the result of the paper was to give support to the theories of Fritz Müller rather than to those of Bates.

Dr. Sharp contributed a paper on "The Rhynchophorous Coleoptera of Japan. Part IV."—H. Goss & W. W. Fowler, *Hon. Secretaries.*

Feb. 19th.—Prof. Raphael Meldola, F.R.S., President, in the chair.

Messrs. T. Hudson Beare, William J. Kaye, and Charles H. Dolby-Tyler, were elected Fellows of the Society.

Dr. D. Sharp exhibited preparations of *Dytiscus latissimus* and *Cybister roeselii*, to show the so-called secondary wing, noticed by Meinert. He stated that this structure is only a part of the elytron, to which it is extensively attached, and he considered that it corresponded with the angle at the base of the wing seen in so many insects that fold their front wing against the body. This structure afforded no support to the view that the elytra of beetles correspond with the tegulæ of Hymenoptera rather than with the front wings. He also exhibited specimens of Neuroptera, and pointed out that this secondary wing agreed in position and structure with a small lobe on the front wing of Raphidia.

Mr. C. G. Barrett exhibited, for Dr. H. G. Knaggs, cells of *Retinia resinana* formed of resin but lined with wax. A portion of the cell had been removed and the resin dissolved away with spirit, leaving a slight film of wax (*cf.* Ent. Mo. Mag. 1895, pp. 251, 252). Mr. Tutt stated that a secretion of wax had been detected by Dr. Chapman in *Parnassius apollo*. Prof. Meldola suggested that, as Dr. Knaggs had shown how to separate the resin from the wax, it would be of interest to make a chemical investigation of the latter, since a sufficient supply of this material could be easily obtained. No insect-wax, with the exception of that of the bee, had been submitted to investigation by chemists.

Mr. Gahan exhibited drawings of the dorsal segments of the abdomen of *Dyscritina longisetosa*, formerly described by Prof. Westwood in Trans. Ent. Soc. 1881, a specimen of which was shown by Mr. E. E. Green at the last meeting of the Society. He regretted that no drawing showing the ventral surface had yet been prepared.

Mr. B. A. Bower exhibited specimens of *Argyresthia atmoriella*, Bankes, taken in Kent in June, 1894, a recent addition to British Lepidoptera.

Mr. E. E. Green read notes on the habits of the Indian Ant, *Œcophylla smaragdina*, Fabr. He believed that Mr. H. N. Ridley, of the Singapore Museum, had made some remarks on this ant and its supposed habit of using its own larvæ as web-spinners in the formation of its nest, but though he had not been able to find anything on the subject in the 'Proceedings,' he was now able to produce corroborative evidence from an independent source. The facts were noted by his friend Mr. W. D. Holland, of Balangoda, Ceylon, a most careful observer. Mr. Green exhibited the specimens referred to by Mr. Holland, and pointed out that the larvæ were still tightly grasped by the jaws of the ants, and he thought it probable that other web-spinning ants utilized their larvæ in the same way. Mr. Hampson said he could confirm this statement.

Mr. G. F. Scott-Elliot read a paper entitled "Notes on Flower-haunting Diptera." The author pointed out that some of the higher types of Diptera appeared to prefer red and blue flowers, and oftener visited the complicated types of plants than the smaller Hymenoptera. He also alluded to the effect of insect visitors in isolating particular individuals. Prof. Meldola expressed himself as much interested in the paper, and stated that although he was aware, from the writings of Hermann Müller and others, that Diptera played an important part in the fertilization of flowers, he was unaware of the great importance which these insects possessed for the function of pollination until he heard Mr. Scott-Elliot's paper. He also called attention to the urgent need of a Manual of British Diptera. Mr. Roland Trimen mentioned that in South Africa some species of *Orchidaceæ* were fertilized by Diptera. Dr. Sharp referred to Prof. Plateau's opinion that neither the colour nor the form of the flower played any part in attracting insects. Mr. McLachlan remarked that the flowers of *Scrophularia* possessed a great attraction for wasps. Lord Walsingham enquired whether any observation had been made as to the Diptera which visited differently coloured flowers of the same species, such as Petunias.

Mr. Tutt read a paper, by Prof. A. Radcliffe-Grote, entitled "On the Nomenclature of the *Geometridæ*." A discussion on the rules of nomenclature followed, in which Lord Walsingham, Prof. Meldola, Mr. Hampson, and Herr Jacoby took part.—H. Goss, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

A Breath from the Veldt. By JOHN GUILLE MILLAIS, Author of 'Game Birds and Shooting Sketches.' With Illustrations by the Author, and Frontispiece by Sir J. E. MILLAIS, R.A. 4to, pp. i–x; 1–236. London: Henry Sotheran & Co. 1895.

THE former volume on Game-birds by this author was reviewed in 'The Zoologist' for 1894 (pp. 354–358). It dealt exclusively with the Grouse family, and the field of observation was Scotland, chiefly Perthshire. In the handsome quarto now before us the scenery is of a very different character. Mr. Millais takes us into South Africa,—Beaufort, Karroo, Colesberg, and part of the Orange Free State,—where we are introduced to many of the characteristic animals, chiefly big game, which delight the heart of the hunter and naturalist.

Mr. Millais possesses this advantage over his contemporaries who have written of African sport and travel,—he is not dependent upon an artist who has never seen what he attempts to draw, but is able to furnish his own illustrations made upon the spot. This undoubtedly is a very great advantage, especially in the case of those wild animals whose portraits hitherto have been taken from museum specimens "with all faults." It is comparatively easy, of course, to correct faulty outlines, and to depict an animal in repose; but the difficulty is to convey an accurate idea of its natural appearance when in motion. Capt. Swayne has attempted something of the sort in his excellent book on Somaliland, which was reviewed in this Journal only last year (pp. 315–318); but his attempt fell short of perfection for want of that artistic training which has served Mr. Millais in such good stead. In this respect Mr. Millais has made a new departure, and he has succeeded in graphically reproducing a series of outlines instantaneously photographed in his mind's eye, and at once transferred to paper, which are as striking as they are novel to all but those who, like himself, have seen what he depicts. This may be said to be the chief feature of his work; but it is not the only feature. His descriptions in the text bear the stamp of close observation, and the details which he gives of the habits of many South African mammals and birds supply gaps in the published accounts of previous writers which will be very acceptable to naturalists.

Here is a description of the Great Karroo, a vast uncultivated plain, stretching away in all directions as far as the eye can reach, except only towards the west, where frowns the sombre range of the Nieuveldt mountains:—

"The whole expanse presented to the eye shows only a great plain of cracked mud, and stunted bushes about a foot high. But presently one discovers that these stunted bushes are, in fact, the favourite sustenance of Springbuck. . . . In the scattered bushlands, too, on the verge of this district, live the graceful Koodoos, along with their enemies the Lion and the Leopard; and, though to-day but a remnant remains of countless herds, there is still plenty of attraction for the naturalist and sportsman.

"Numerous troops of Springbuck may be met with; a Steinbuck may here and there be seen; also the Silver and Long-eared Jackals; whilst hundreds of Meercats burrow in the ground or live in the holes of the Aardvark. Even to-day the Cheetah, or Hunting Leopard, follows the herds of the Springbuck like a shadow; whilst in the adjoining mountains the Leopard devotes his attention mainly to the scattered troops of Vaal and Roi Rhebuck, Baboons, and Klipspringers.

"The birds of this portion of South Africa are, however, more interesting and numerous than the mammals. In small parties the graceful Stanley Crane stalks along the bare ground in search of locusts, its exquisite French-grey colouring contrasting strongly with the brown earth; and at sunset its hoarse trump may be heard as the flocks wing their flight to some solitary spot far in the heart of the desert, where they can pass the night without fear of disturbance. Moving in a string across the sky, they give the last touch to a scene of splendour such as only the Karroo can show.

"Here on the plains may be seen that most interesting creature the Secretary-bird, plodding along in his thoroughly business-like manner,—a large raptorial bird, slate and white as to colour, and quite unique in all his movements as he walks about in search of food. . . . As to his alleged snake-killing exploits, I think he is a bit of a fraud. No doubt he does occasionally kill these reptiles, but the true poisonous snakes are rare in the open lands of the Colony, Free State, and Lower Transvaal, where these birds are mostly found, and where their depredations are known to be very great amongst the young of

FIG. 1.— DEAD GIRAFFE (see p. 161).

Khoorhans (Bustards) and Francolins. . . . To the eye his flight is exceedingly fine, resembling the grand movements of an Eagle. Curiously enough, however, his evolutions in the air are exceedingly weak. He has no staying power, and in many instances has been captured by greyhounds, which, after keeping the bird continually on the wing for some time, are able to run it down when finally forced to alight from sheer fatigue, and no longer able to rise again.

"Over the surface of the great sun-baked flats continually float Eagles, Hawks, and Harriers in great variety. On its dams of water are found the Egyptian Goose, the Cape Shoveller, the Pochard, several species of Plovers and little waders; whilst in the early morning the Namaqua Sandgrouse come to the margins in large numbers to drink in company with Pigeons, and that most exquisite little creature the Dwarf Dove. . . . But perhaps the most characteristic birds of this part of the country are the Koorhans, or Bustards, pre-eminently associated with South Africa, for they are everywhere *en evidence*, cheering with their wild goose-like notes the heart of the sportsman who is stranded in the wilderness; for they supply a want, in the shape of food, which in their absence would be keenly felt."

This description conveys a very good idea of the author's style, and of the nature of the country in which his observations were chiefly made.

The following remarks on the variation in the size of Antelopes in different parts of Africa are worth repeating:—

"The Antelope attains to the finest size and head in the vicinity of Kilimanjaro in north-east Africa, and the smallest in Nyassaland. . . . Possibly the very best heads of Pallah killed on the southern bank of the Limpopo may compare favourably with those of Masailand, but as a rule they are far inferior, and I fancy every year sees a deterioration in the horns of the southern form. . . . This increase in size of heads of the Pallah in their extreme northward range is very remarkable, for, as a rule, both in Southern and Central Africa, the tendency of the animal is to become smaller both in body and horn as higher latitudes are reached. The difference is hardly noticeable in the fine Roan and Sable Antelopes, but in the case of the Koodoo, the Reedbuck, the Bushbuck, the Springbuck, the Eland, the Waterbuck, and the Gemsbuck, it is certainly most marked. Taken on an average, the heads of Koodoo bulls killed in the Transvaal, and at one time in the old colony, are certainly finer than those of the same species in Mashonaland, whilst the horns of individuals killed in the latter country surpass those of Somaliland and Abyssinia. The Reedbuck of the Transvaal is far finer than any found northwards in West Africa, as is also the Waterbuck. The Gemsbuck and the Eland grow finer in the Kalahari than in other parts of Africa, while the Springbuck of the Kalahari, Ovampoland and the Transvaal are small by comparison with those of the Karroo in Cape Colony. The Pallah, therefore, after dwindling away to almost a dwarf in Nyassaland, seems to have gained double strength in his East African home, becoming a much finer animal than his South-African congener. This is the more curious, as the Koodoo, whose food and general requirements are almost exactly similar, shows no difference but the general northward deterioration."

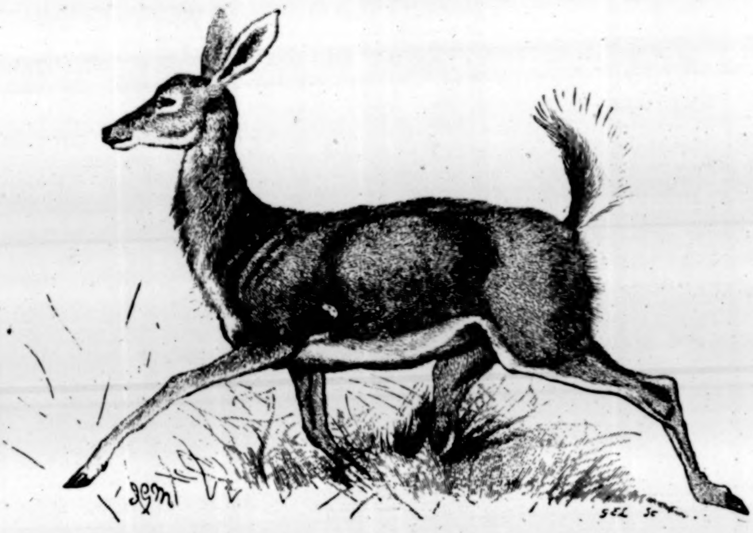

FIG. 2.—A ROI RHEBUCK.

In regard to the illustrations, many of them, as we have already hinted, are strikingly original in their treatment.

Through the courtesy of the publishers, Messrs. Sotheran, we are enabled to reproduce a few of the smaller pictures; for some of the more characteristic, which might have been selected, are too large for an octavo page. Taking them in the order in which they are to be found in the book, we give first a portrait, from a photograph, of a dead Giraffe, with Dutch hunters, showing very admirably the relative proportions of man and beast.

The Roi Rhebuck moving off (p. 195), and the Wounded Black Wildebeest (p. 228), are spirited drawings of wild animals in motion. The attitude of a Bustard, hovering when disturbed (p. 229), is curious, and is perhaps not confined to the White-quilled Black Khoorhan, of which a larger figure is given on page 39; and the evening "play" of the Bush Khoorhan (figured on page 58) is described by Mr. Millais as one of the most extraordinary aerial feats he has ever seen. Every evening, he says, as the sun approaches the horizon, the Bush Khoorhan rises

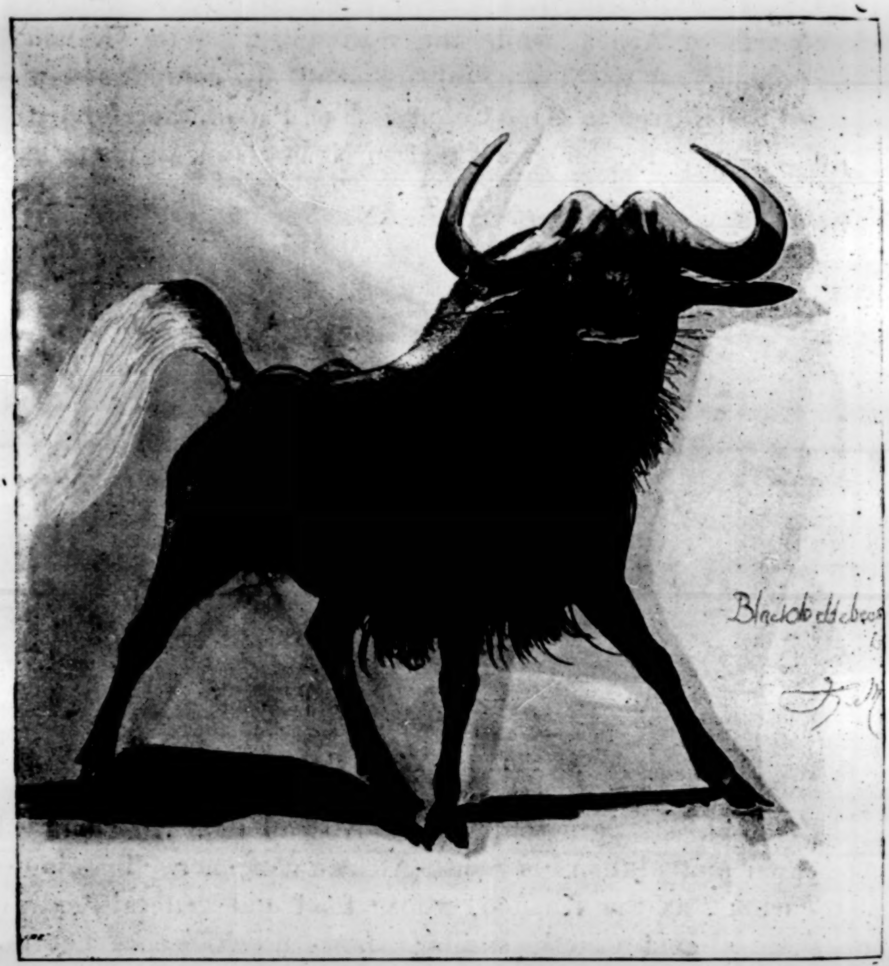

FIG. 3.—A WOUNDED WILDEBEEST.

from the grass, and mounting perpendicularly into the air, at a height of from 100 to 200 feet, it closes its wings and drops head first to earth, only opening the wings to break its fall when within a few feet of the ground.

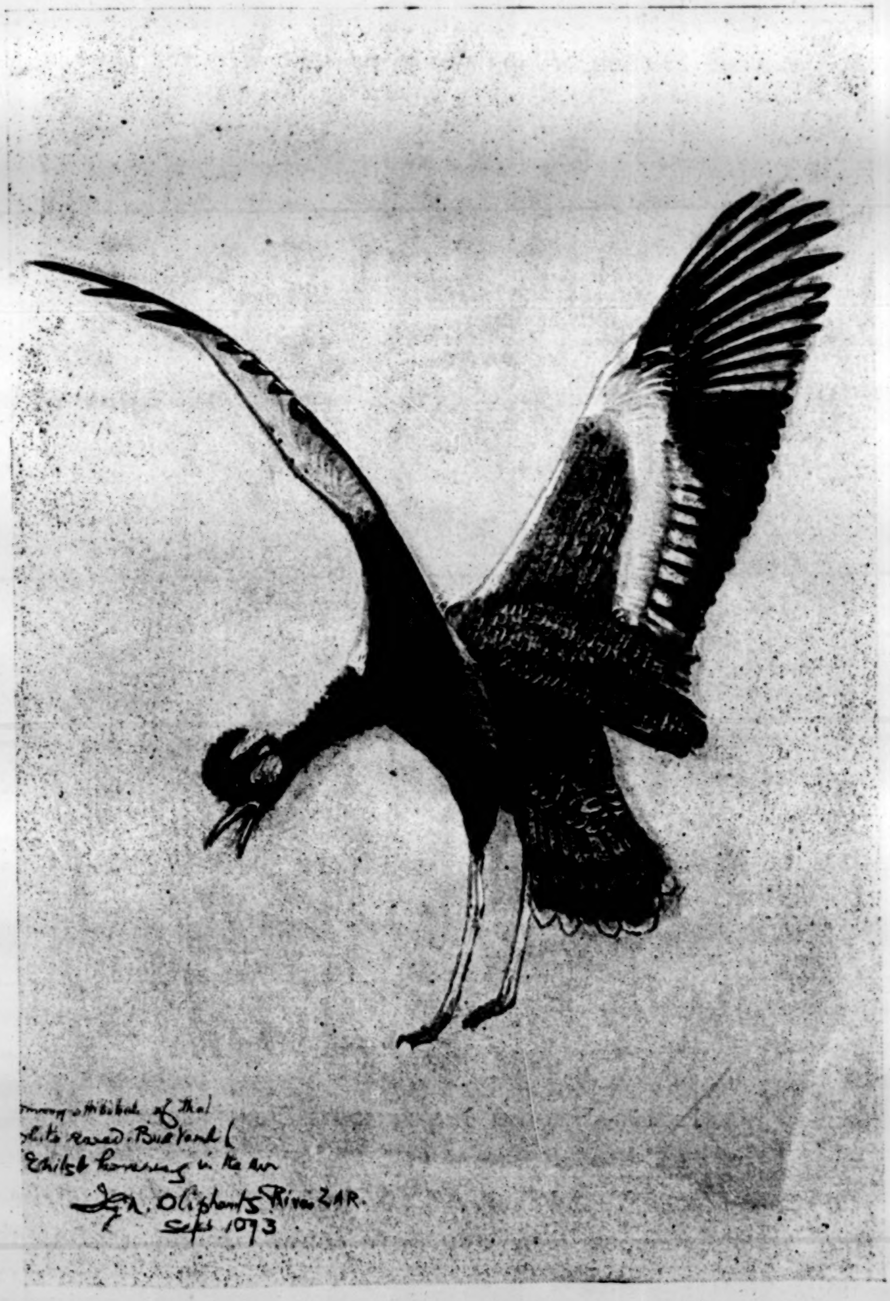

Fig. 4.—Black Bustard.

The last illustration shows the difference in the face-markings of the Blesbuck and the Bontebuck. Vast herds of the former once roamed throughout the Orange Free State, Southern Transvaal, and Southern Bechuanaland; but now their numbers are confined to such troops as are preserved by the Boers north and south of the Vaal River. The Blesbuck and the Bontebuck (which stands about 3 ft. 4 in.) are commonly included in the family of Gazelles, but in the opinion of Mr. Millais are more nearly allied to the Hartebeests. Like other gregarious animals, they are extremely shy, especially when the grass is short; so they are by no means easy to shoot. Contrary to the received

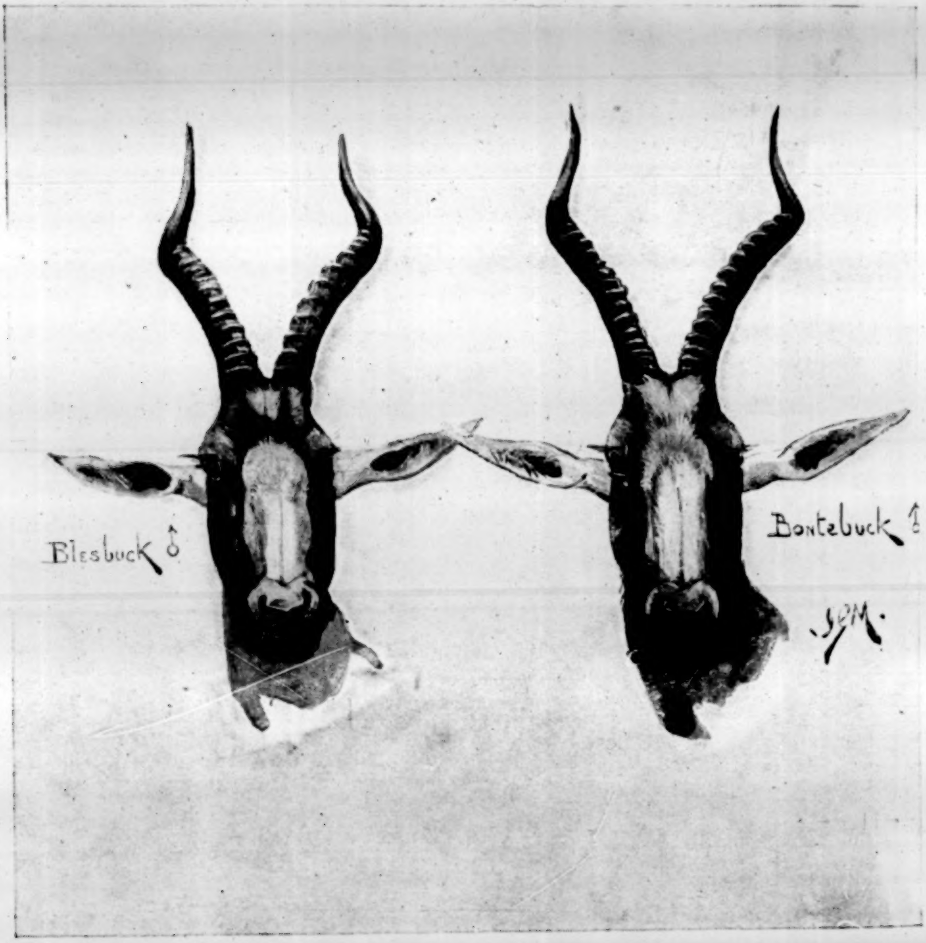

Fig. 5.—Head of Blesbuck and Bontebuck.

opinion, Mr. Millais considers the Blesbuck a fleeter animal than the Springbuck, and says that no dogs could overtake the former, while the latter was often coursed and killed. A Blesbuck's pace is a rolling, somewhat heavy canter, resembling the action of a Hartebeest, and when running up wind it frequently moves like a Springbuck (with its head close to the ground like a hound on scent); but if pressed, it can upon occasion show great speed and energy.

In the foregoing remarks and extracts we have given but a faint indication of the amount of interesting matter which is contained in this volume.

It is just one of those books in which a hunter will delight on account of the pleasant memories it will recall, and which a naturalist will treasure for the careful descriptions and spirited portraits of wild animals which are given by one who has seen and studied them in their native haunts.

Supplement to 'The Birds of Devon.' By W. S. M. D'URBAN and MURRAY A. MATHEW. 8vo, 32 pp. London: Porter. 1895.

THE volume to which this is a supplement was reviewed in 'The Zoologist' for 1892 (pp. 438—441). It must be satisfactory to the authors to find that their labours have been so much appreciated as to justify the publication of a second edition. Those who already possess the first may avail themselves of the additional matter incorporated in the second, by securing this Supplement, in which the name of every species preceding the fresh observations upon it is followed by a reference to the page of the former work in which it is mentioned. By this plan it is easy to ascertain the author's views respecting any given species up to November, 1895, the date of the Preface to the Supplement. We note, *inter alia*, that since 1892 they have been able to increase the list of species nesting in the county. For example, the Reed Warbler, formerly considered to be only an occasional and rare visitor, proves to be a regular summer migrant in large numbers to Slapton Ley and other meres; the Tree Sparrow has been found to be resident at Kingsbridge in South Devon, receiving accessions to its numbers in autumn; the nest of the Short-eared Owl has been found at Braunton; and there are species of Ducks to be added to those that are known to nest at

Slapton Ley, which had been omitted for lack of information from that particular locality. We are not surprised to learn that the Pochard and Shoveller occasionally rear their broods in the vicinity of that attractive sheet of water, but are scarcely prepared to accept the author's view that the presence of young Wigeon there in August indicates their having been hatched in that neighbourhood. Wigeon are amongst the earliest of winter visitors to make their appearance in the South of England. In Sussex we have long been accustomed to see small flocks in September, and larger flocks as the autumn advanced. There is nothing improbable, therefore, in the assumption that Wigeon observed in Devonshire in August may well have been hatched two months earlier in Caithness, Ross, or Sutherland, or even in Lapland or Iceland, for the flight of this Duck is very rapid, and it is not long in acquiring sufficient power of wing for migration.

We are also somewhat sceptical about the supposed nesting of the Red-necked Grebe in Devonshire; for although this bird is resident in the south of Norway, and breeds not uncommonly in Denmark, and some parts of Northern Germany, it has never yet been recognised but as a winter visitor to the British Islands.

The Ruddy Sheldrake, again, is a bird which we think is very doubtfully to be included as a genuine immigrant to this country. It is so frequently imported and turned out with other ornamental water-fowl, and recovers the use of clipped wings, that in all probability the birds of this species which have been shot from time to time in an apparently wild state have in reality made their escape from the places where they have been introduced.

Messrs. D'Urban and Mathew give a list of twenty-two species (nine of them American) which have occurred in Cornwall and the Scilly Islands, but which have not yet been observed in Devonshire. Amongst these we note, with some surprise, the Ortolan, Baillon's Crake, and Roseate Tern; for we should have supposed that with so many good ornithologists in this county, all these birds would have been detected ere this as periodical visitors to the county. Their discovery probably is only a matter of time.

This 'Supplement' to the 'Birds of Devon' is well posted up to date, and includes, amongst additions to the county list, one (namely, the American Yellow-billed Cuckoo) recorded in 'The Zoologist' for 1895, p. 376.

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